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Examining the Relationships among the Coaching Climate, Life Skills Development and Well-Being in Sport

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Abstract

Using Benson and Saito's¹ framework for positive youth development, we investigated the relationships between the coaching climate, young people's perceived life skills development within sport, and their psychological well-being. British youth sport participants ($N = 326$, $M_{age} = 13.81$, range = 11–18 years) completed a survey assessing the coaching climate, participants' perceived life skills development (teamwork, goal setting, time management, emotional skills, interpersonal communication, social skills, leadership, and problem solving and decision making) and psychological well-being (self-esteem, positive affect, and satisfaction with life). In all analyses, the coaching climate was positively related to young peoples' perceived development of life skills within sport and their psychological well-being. Total life skills development (a summative score of all eight life skills scores) was positively related to all three psychological well-being indicators – providing support for the “pile-up” effect² – and partially mediated the relationships between the coaching climate and participants' psychological well-being. Interpretation of the results indicated that coaches should foster the development of multiple life skills in youth sport participants, as they are associated with participants' psychological well-being. One way this can be achieved is through autonomy-supportive coaching behaviours.

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Keywords

Positive youth development, psychosocial development, mediation analysis, youth sport

51 **Introduction**

52 Over the last twenty five years a new vision of youth development has emerged called
53 positive youth development. At its core, positive youth development refers to strength-based
54 and asset building approaches to developmental research in which young people are seen as
55 ‘resources to be developed’ as opposed to ‘problems to be solved’.³ Three key aspects of the
56 positive youth development approach are the developmental climate, young peoples’ life
57 skills development, and their psychological well-being.^{4,5} Youth sport has long been viewed
58 as an ideal context for youth development.⁶ Researchers have suggested that the interactive,
59 emotional, and social nature of sports provides opportunities for development.^{7,8,9} Within the
60 current study, we defined sport as an organized activity which encompasses both team and
61 individual sports and includes regularly scheduled practices and competitions.

62 Numerous studies have demonstrated that young people develop an array of life skills
63 through sport.^{10,11,12} Such life skills have been defined as the skills that are required to deal
64 with the demands and challenges of everyday life.¹³ In line with Danish et al.¹⁴, we view life
65 skills as behavioural, cognitive, interpersonal, and intrapersonal competencies that can be
66 learned, developed, and refined. Using the Life Skills Scale for Sport (LSSS)¹⁵, researchers
67 can investigate the eight most commonly cited life skills which young people are purported to
68 develop through sport: teamwork, goal setting, time management, leadership, social skills,
69 interpersonal communication, emotional skills, and problem solving and decision making.¹⁶
70 Given the dominance of qualitative research within the positive youth development through
71 sport literature⁶ and previous difficulties in measuring life skills development within sport¹⁷,
72 Cronin and Allen’s¹⁵ development and initial validation of this scale is an important
73 advancement for the field. This scale provides researchers with a measure to
74 comprehensively assess eight key life skills, which have been highlighted across numerous
75 reviews as being developed through sport.^{16,17} Using the scale, researchers can begin to

thoroughly investigate both the antecedents and consequences of life skills development through sport.

In terms of antecedents, there has been a growing acknowledgement in recent years that coaches in particular play a central role in ensuring young peoples' life skills development through sport.¹⁰ For instance, qualitative research involving underserved South African youth showed that intentionally trying to teach life skills, modelling life skills, and promoting group discussions are all strategies that coaches used to develop adolescents' life skills within the context of sport.¹¹ Quantitative research with Australian youth soccer players found that the coach-athlete relationship and a coach's transformational leadership behaviours were positively related to the development of personal and social skills, cognitive skills, goal setting, and initiative.¹⁸ Similarly, a study with American youths playing baseball/softball found that a mastery-oriented and caring coaching climate was related to participants' development of the same set of life skills.¹⁹

Another way in which the climate created by the coach has been conceptualised is in terms of autonomy support. Autonomy support is part of self-determination theory²⁰ and refers to the coach: providing choice to athletes, acknowledging athletes' feelings and perspectives, providing opportunities for initiative taking and independent work, and delivering competence feedback.²¹ Interestingly, past research highlighted that aspects of autonomy support such as empowerment, independence, and a recognised voice were key attributes of 60 community-based youth development programmes that successfully promoted young peoples' development.²² In this regard, Occhino et al.²³ suggested that there is consistent positive evidence for using an autonomy-supportive approach within learning contexts. Recent studies in sport have shown autonomy support to be associated with participants' life skills development. For example, a study with British youth sport participants found that coach autonomy support was related to participants' development of

personal and social skills, cognitive skills, goal setting, and initiative.¹² Another qualitative study found that effective American youth sport coaches use autonomy support to promote athletes' life skills development.²⁴

Past studies in sport and physical education have also found that coaches' or teachers' autonomy-supportive behaviours are positively associated with participants' psychological well-being, as indicated by higher self-esteem, positive affect, and life satisfaction.^{12,25,26}

Within sport, little is known about the role of life skills development in gaining these positive outcomes. The current study focused on the outcome of psychological well-being and like previous research assessed this construct using measures of self-esteem, positive affect, and satisfaction with life.^{26,27} Self-esteem was defined as "a person's evaluation of, or attitude toward, him- or herself" (p. 435);²⁸ positive affect is "the extent to which an individual experiences pleasurable engagement with the environment" (p. 246);²⁹ and satisfaction with life was defined as "a global assessment of a person's quality of life according to his/her chosen criteria" (p. 478).³⁰ To date, only one study involving 202 British youth sport participants¹² has examined the relationships between participants' life skills development within sport and their psychological well-being. This study found that personal and social skills development through sport was related to participants' self-esteem, positive affect, and satisfaction with life. In contrast, cognitive skills, goal setting, and initiative were unrelated to participants' psychological well-being. However, using the LSSS¹⁵ it is important to assess if the development of a wider range of life skills through sport is associated with participants' psychological well-being.

Individual life skills, along with a range of life skills, are important for young peoples' development. In this regard, Benson² proposed that the more strengths or life skills a young person possesses, the better off they will be on a variety of other outcomes – this has been termed the "pile-up" effect. Extensive reviews of the youth development literature

outside of sport have supported the idea of a “pile-up” effect, with the total number of strengths young people possess being positively related to academic, behavioural, and well-being outcomes.³¹ Research within physical education has also shown that students’ total life skills development within physical education is consistently associated with their psychological well-being.²⁵ These findings fit with the untested premise that the more life skills young people learn through sport, the more likely they will develop in a positive manner.³²

In their framework for youth development theory and research, Benson and Saito¹ proposed that youth development inputs (e.g., the coaching climate) serve to develop young peoples’ strengths (e.g., their life skills), and the development of these strengths promote other well-being outcomes. This conceptual framework was proposed to promote “the systematic inquiry necessary to guide, shape, refine, and fuel the [positive youth development] approach” (p. 143).¹ The overarching framework is useful as it allows researchers to investigate the relationships between three key aspects of positive youth development: the developmental climate, life skills development, and participants’ well-being.^{4,5} Benson and Saito’s¹ framework is similar to recently proposed models of positive youth development through sport¹⁷ and life skills transfer from sport to other life domains.³³ Specifically, these models also highlight that the coaching climate is related to participants’ life skills development and that life skills development is related to other positive outcomes.

The overall purpose of this study was to investigate the relationships between coach autonomy support, participants’ perceived life skills development within sport, and their psychological well-being. The first aim of the study was to examine whether British youth sport participants were developing the eight life skills. Consistent with a review of the research literature¹⁶ – which included research predominantly from North America – it was expected that participants would report developing these life skills. The second aim was to

investigate whether developing each of the eight life skills, along with the whole set of life skills (i.e., “pile-up” effect), was positively related to participants’ self-esteem, positive affect, and satisfaction with life. In line with previous research,^{25,31} we expected some individual life skills and total life skills to be related to participants’ self-esteem, positive affect, and satisfaction with life. The third aim was to assess whether coach autonomy support was positively related to each of the eight life skills. Based on previous studies in youth sport,^{15,24} it was anticipated that coach autonomy support would be positively related to each of the life skills. The final aim was to assess whether life skills development mediated the relationships between coach autonomy support and participants’ psychological well-being. Based on Benson and Saito’s¹ framework, it was expected that life skills development would mediate the relationships between coach autonomy support and participants’ psychological well-being.

Method

Participants

In total, 326 British youth sports participants ($M_{\text{age}} = 13.81$, $SD = 1.52$, age range = 11–18 years) from club (72.7%) and school (27.3%) sports took part in the research. The sample had more male ($n = 188$) than female participants ($n = 138$). Participants’ main sport included football ($n = 80$), dance ($n = 44$), rugby ($n = 36$), field hockey ($n = 24$), basketball ($n = 22$), track and field ($n = 15$), gymnastics ($n = 14$), swimming ($n = 13$), and taekwondo ($n = 11$). In total, 67 respondents took part in 29 other sports (e.g., horse riding, badminton, golf). Participants had taken part in their main sport for an average of 5.74 years ($SD = 3.65$), spent an average of 4.13 hours per week participating in their sport ($SD = 3.74$), and were coached by their current coach for an average of 2.84 years ($SD = 2.97$). Apart from their main sport, participants took part in between 0–6 other sports ($M = 0.88$, $SD = 1.13$).

Procedures

Following approval from the university's ethics committee, participants were recruited from local schools. Prior to participation, written informed consent was obtained from the participant's parent or guardian, if they were less than 16 years old. All participants also signed a written informed consent form prior to completing the paper-and-pencil survey. Participants completed the survey after the researcher explained the purpose of the study, that participants' were to respond to all questions in relation to their main sport, that there were no right or wrong answers, and that all information was anonymous and would be kept confidential. The survey took approximately 15–20 minutes to complete.

Measures

Coach autonomy support. Perceptions of coach autonomy support were assessed with the 6-item version of the Sport Climate Questionnaire.³⁴ This questionnaire allows athletes to rate their coach in terms of autonomy support. Example items include “I feel understood by my coach” and “My coach listens to how I would like to do things.” Each item is rated on a 7-point scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). The scale has previously displayed adequate reliability and validity with adolescents.³⁵ In the current sample, the scale displayed a Cronbach's alpha coefficient of .94, which was above the .70 deemed necessary for the psychological domain.³⁶

Life skills development. The 43-item LSSS¹⁵ was used to measure participants' perceived life skills development through sport. Participants were asked to “rate how much your sport has taught you to perform the skills listed below.” The stem for each question was “This sport has taught me to...” and responses were provided on a 5-point scale ranging from 1 (*Not at all*) to 5 (*Very much*). Example items included: *teamwork* (7 items; “work well within a team/group”), *goal setting* (7 items; “set specific goals”), *time management* (4 items; “manage my time well”), *emotional skills* (4 items; “use my emotions to stay focused”), *interpersonal communication* (4 items; “communicate well with others”), *social skills* (5

items; “interact in various social settings”), *leadership* (8 items; “organise team/group members to work together”), and *problem solving and decision making* (4 items; “think carefully about a problem”). Previous research provided evidence for the validity and reliability of this scale with youth sport participants.¹⁵ In the current sample, each of the subscales of the LSSS and total life skills displayed adequate internal consistency reliability with alpha coefficients ranging from .81–.96. Within the supplementary materials, we also provide evidence (i.e., fit indices and factor loadings) for the factorial validity of this relatively new scale.

Self-esteem. Self-esteem was measured using the general-self subscale of the Self-Description Questionnaire II.³⁷ Five items of the subscale are phrased positively (e.g., “Most things I do, I do well”) and five items are written to reflect low self-esteem (e.g., “Overall, I am a failure”). Participants respond on a 7-point scale ranging from 1 (*False*) to 7 (*True*). The construct validity and reliability of the scale has been supported with adolescents inside and outside of sport.^{27,37} The alpha coefficient was .84 for the current sample.

Positive affect. Positive affect was assessed using the positive subscale of the Positive and Negative Affect Schedule.³⁸ This 10-item scale asks participants to rate how a word (e.g., “inspired” or “active”) describes their feelings “in general.” The participants rate the extent to which they feel that way on a 5-point scale ranging from 1 (*Very slightly or not at all*) to 5 (*Extremely*). This scale has displayed adequate reliability and factorial validity with youth sport participants.³⁹ The current sample displayed an alpha coefficient of .89.

Satisfaction with life. Satisfaction with life was measured using the Satisfaction With Life Scale.⁴⁰ This 5-item scale asks participants to indicate their agreement with certain statements (e.g., “I am satisfied with life”). Participants respond on a 7-point scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). This scale has displayed adequate factorial

validity and reliability with adolescents.⁴¹ The alpha coefficient was .87 for the current sample.

Strategy for Mediation Analyses

The mediation hypotheses were tested for all three dependent variables: self-esteem, positive affect, and satisfaction with life. For this task, we employed non-parametric bootstrapping analysis⁴² which allows one to estimate direct and indirect effects in models with multiple mediators and has been shown to perform better than other techniques in terms of statistical power and Type I error control.⁴³ To test for mediation, we used the PROCESS macro for SPSS⁴² with 20,000 bootstrap resamples and 95% bias corrected confidence intervals (CIs). There is evidence of mediation, or a specific indirect effect, when zero is not included within the lower and upper bound CIs. Previous studies have tested for mediation using this approach.⁴⁴

Results

Preliminary Analysis

Three participants had more than 5% missing data and were therefore deleted from the sample. For the remaining sample ($N = 323$), of the 74 items each individual item was left blank an average of 5.53 times across the whole sample ($SD = 1.19$; range = 0–14). Missing data analysis revealed no pattern to these missing values, rather the data was missing at random. As the percentage of missing data was low (1.71%) and we wanted to minimise lost data, a mean substitution was performed. Mean substitution is a valid approach when a small percentage of data is missing from a moderately sized sample.⁴⁵ Prior to conducting the main analyses, the data were screened for normality. Skewness values ranged from -1.42 to -0.27 and kurtosis values ranged from -0.55 to 3.01, indicating reasonable normality.⁴⁵

Descriptive Statistics

Table 1 presents the means, scale ranges, standard deviations, reliability coefficients, and correlations for all variables. The mean score for coach autonomy support was 5.64 on the 1–7 scale, indicating that participants felt their coaches were displaying high levels of autonomy support. The mean scores on the 1–5 response scale of the LSSS were as follows: teamwork (4.04), interpersonal communication (3.99), social skills (3.96), goal setting (3.87), leadership (3.83), time management (3.69), emotional skills (3.59), and problem solving and decision making (3.47). Based on these scores, one could conclude that participants were learning at least ‘some’ (3 on the response scale) life skills and at most ‘a lot’ (4 on the response scale) of life skills through sport. The mean scores for the psychological well-being indicators were: 4.66 on the 1–6 scale for self-esteem, 4.19 on the 1–5 scale for positive affect, and 5.36 on the 1–7 scale for satisfaction with life. These scores meant that participants scored highly on each of the psychological well-being indicators. Overall, the correlations revealed that the relationships between coach autonomy support and the eight life skills, along with the three psychological well-being indicators, were significant and positive. In general, each of the eight life skills and total life skills were positively related to participants’ self-esteem, positive affect, and satisfaction with life.

Main Analyses

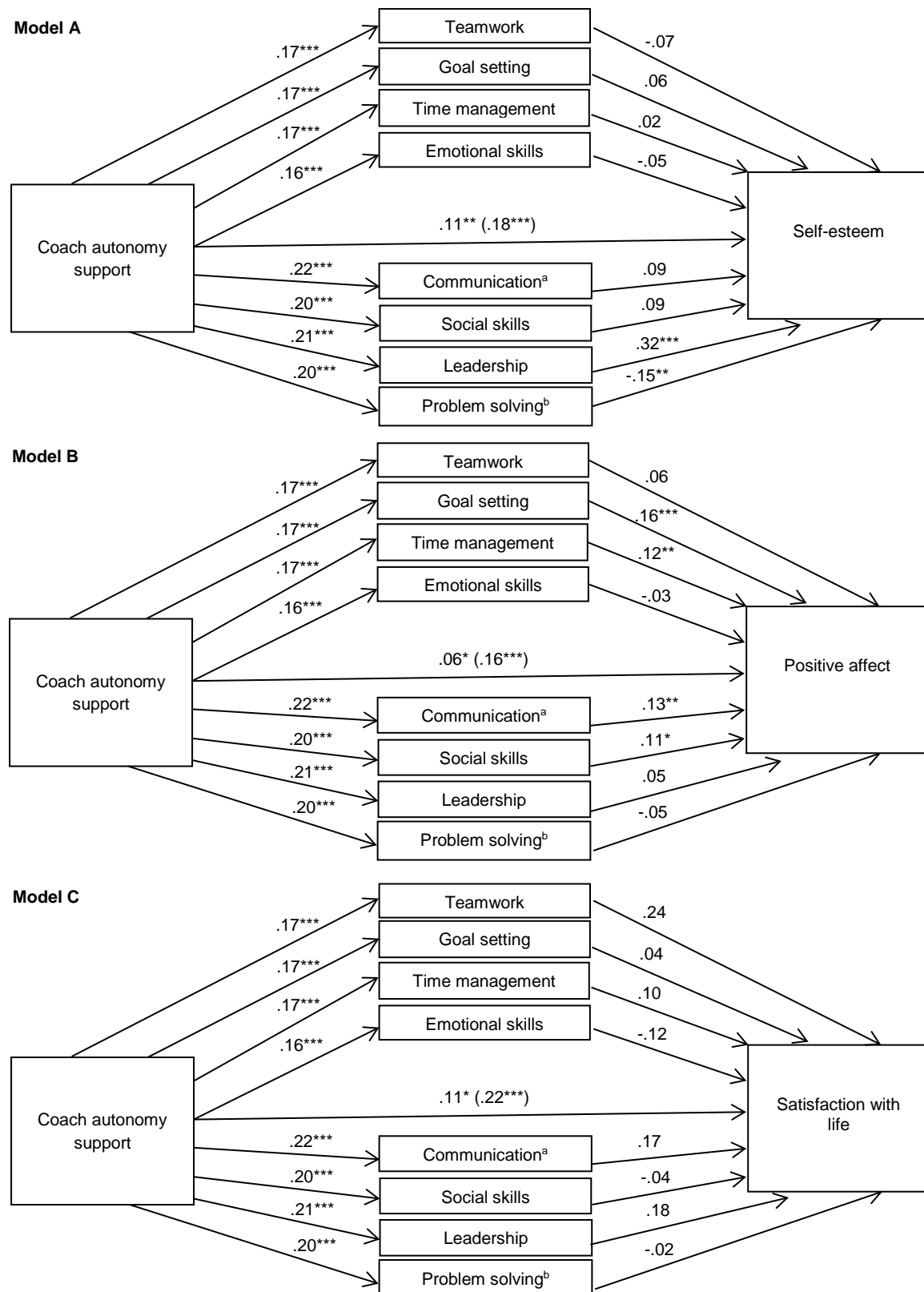
Figure 1 displays unstandardized regression coefficients for each of the three mediation models. Within the mediational models, we controlled for evident gender, sport type, and age group differences (see supplementary materials for details of these differences). In all models, coach autonomy support was included as the independent variable. Teamwork, goal setting, time management, emotional skills, interpersonal communication, social skills, leadership, and problem solving and decision making were included as parallel mediators. Model A included self-esteem as the dependent variable, Model B had positive affect as the

Table 1. Summary of Intercorrelations, Scale Ranges, Means, Standard Deviations and Reliability Estimates

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Autonomy support	—												
2. Teamwork	.35***	—											
3. Goal setting	.29***	.40***	—										
4. Time management	.25***	.30***	.54***	—									
5. Emotional skills	.20***	.35***	.46***	.54***	—								
6. Communication ^a	.34***	.40***	.37***	.50***	.45***	—							
7. Social skills	.34***	.49***	.39***	.41***	.46***	.59***	—						
8. Leadership	.37***	.54***	.51***	.52***	.46***	.58***	.62***	—					
9. Problem solving ^b	.25***	.36***	.48***	.51***	.52***	.47***	.45***	.54***	—				
10. Total life skills	.41***	.66***	.73***	.72***	.71***	.72***	.74***	.84***	.73***	—			
11. Self-esteem	.28***	.18**	.18**	.17**	.11*	.27***	.26***	.33***	.09	.28***	—		
12. Positive affect	.33***	.34***	.43***	.43***	.31***	.45***	.42***	.43***	.31***	.53***	.34***	—	
13. Life satisfaction	.26***	.23***	.21***	.23***	.09	.27***	.19**	.27***	.15**	.28***	.45***	.33***	—
Scale range	1–7	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–6	1–5	1–7
Mean	5.64	4.04	3.87	3.69	3.59	3.99	3.96	3.83	3.47	3.83	4.66	4.19	5.36
Standard deviation	1.36	0.67	0.86	0.98	1.07	0.89	0.84	0.81	1.04	0.64	0.85	0.66	1.21
Cronbach's alpha	.94	.83	.91	.89	.89	.81	.85	.91	.91	.96	.84	.89	.87

Note. ^aRefers to interpersonal communication skills. ^bRefers to problem solving and decision making skills.

* $p < .05$. ** $p < .01$. *** $p < .001$



dependent variable, and Model C included satisfaction with life as the dependent variable. Results of the indirect effects are presented in Table 2, which tells us whether there is a total indirect effect and what effect (if any) each of the mediators are having. The total indirect effect also represents the indirect effect of total life skills development, as it is the sum of the

Table 2. Indirect Effects of Coach Autonomy Support on Psychological Well-being (Self-Esteem, Positive Affect and Satisfaction With Life) Through Each Mediator

	Bootstrap effect	Normal effect	Normal theory tests			95% CI
			SE	z	p	
Self-esteem						
Total effect	.07					[.03, .11]
Teamwork	-.01	-.01	.02	-0.79	.43	[-.05, .02]
Goal setting	.01	.01	.01	0.80	.43	[-.01, .03]
Time management	.003	.003	.01	0.23	.82	[-.02, .02]
Emotional skills	-.01	-.01	.01	-0.89	.37	[-.03, .01]
Communication ^a	.02	.02	.02	1.30	.19	[-.01, .05]
Social skills	.02	.02	.02	1.13	.26	[-.02, .05]
Leadership	.07	.07	.02	3.28	.001	[.03, .13]
Problem solving ^b	-.03	-.03	.01	-2.27	.02	[-.06, -.01]
Model	$F(12, 310) = 5.58^{***}, R^2 = .18$					
Positive affect						
Total effect	.10					[.06, .16]
Teamwork	.01	.01	.01	0.98	.33	[-.02, .04]
Goal setting	.03	.03	.01	2.79	.01	[.01, .05]
Time management	.02	.02	.01	2.22	.03	[.01, .04]
Emotional skills	-.01	-.01	.01	-0.79	.43	[-.02, .01]
Communication ^a	.03	.03	.01	2.43	.02	[.01, .06]
Social skills	.02	.02	.01	2.01	.05	[-.002, .06]
Leadership	.01	.01	.01	0.78	.43	[-.02, .04]
Problem solving ^b	-.01	-.01	.01	-1.16	.25	[-.03, .01]
Model	$F(12, 310) = 13.45^{***}, R^2 = .34$					
Satisfaction with life						
Total effect	.11					[.05, .20]
Teamwork	.04	.04	.02	1.90	.06	[-.003, .10]
Goal setting	.01	.01	.02	0.42	.68	[-.03, .05]
Time management	.02	.02	.02	1.03	.30	[-.01, .06]
Emotional skills	-.02	-.02	.01	-1.41	.16	[-.06, .01]
Communication ^a	.04	.04	.02	1.69	.09	[-.01, .10]
Social skills	-.01	-.01	.02	-0.35	.72	[-.06, .03]
Leadership	.04	.04	.03	1.48	.14	[-.02, .11]
Problem solving ^b	-.004	-.004	.02	-0.24	.81	[-.04, .03]
Model	$F(12, 310) = 5.05^{***}, R^2 = .16$					

Note. Bootstrap generated confidence intervals. CI = confidence interval.

^aRefers to interpersonal communication skills. ^bRefers to problem solving and decision making skills.

*** $p < .001$.

indirect effects for each mediator. Finally, Figure 2 displays the mediation model when total life skills was included as a sole mediator.

The mediation models in Figure 1 showed that coach autonomy support was positively related to all eight mediators: teamwork, goal setting, time management, emotional skills, interpersonal communication, social skills, leadership, and problem solving and decision making. However, consistent relationships were not seen between each of the eight life skills and the psychological well-being indicators. Only leadership was positively related and problem solving and decision making negatively related to self-esteem. Goal setting, time management, interpersonal communication, and social skills were positively associated with positive affect. Finally, none of the eight life skills were related to satisfaction with life.

The first model included self-esteem as the dependent variable (Figure 1, Model A). Within this model, the total effect of coach autonomy support on self-esteem was significant. When the mediators were entered into the model, the direct effect of coach autonomy support on self-esteem was reduced but still significant, suggesting partial mediation. Of the proposed mediators (see Table 2), leadership along with problem solving and decision making displayed significant indirect effects. Total life skills development also displayed a significant indirect effect.

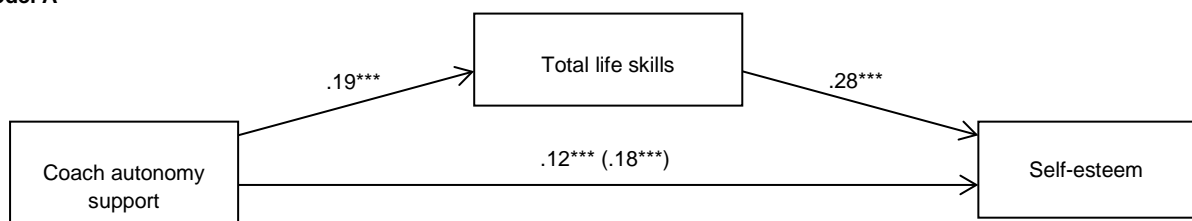
The second model included positive affect as the dependent variable (Figure 1, Model B). Within this model, the total effect of coach autonomy support on positive affect was significant. When the mediators were included, the direct effect of coach autonomy support on positive affect was still significant although reduced, suggesting partial mediation. Of the proposed mediators (see Table 2), goal setting, time management, and interpersonal communication displayed significant indirect effects. Again, total life skills development displayed a significant indirect effect.

The third model included satisfaction with life as the dependent variable (Figure 1,

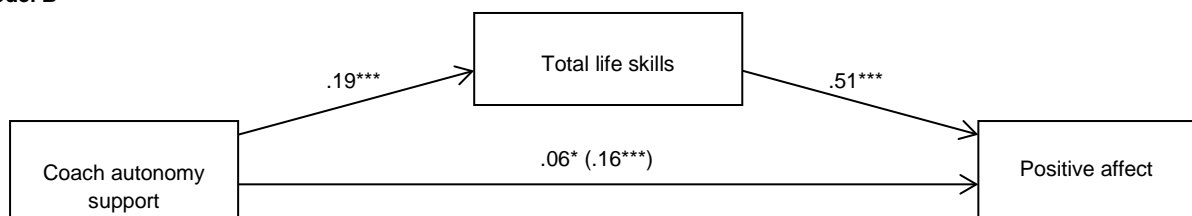
Model C). Within this model, the total effect of coach autonomy support on satisfaction with life was significant. When the mediators were entered into the model, the direct effect of coach autonomy support on satisfaction with life was reduced but still significant, suggesting partial mediation. Of the proposed mediators (see Table 2) none of the individual life skills displayed a significant indirect effect; whereas, total life skills development did display a significant indirect effect.

As total life skills development consistently displayed significant indirect effects, we ran three models which included total life skills as a mediator (Figure 2, Models A–C). The three models showed that coach autonomy support was positively related to total life skills development. Total life skills development was positively related to self-esteem, positive

Model A



Model B



Model C

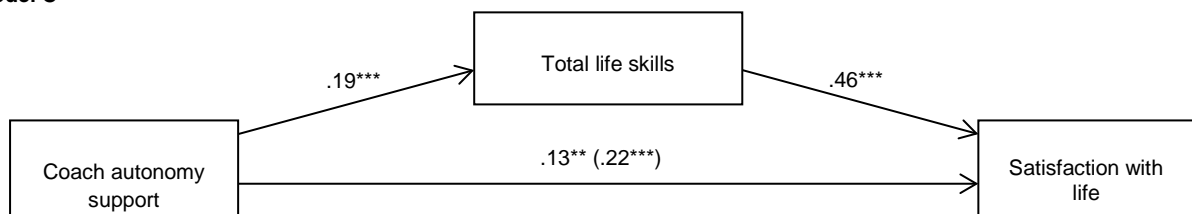


Figure 2. Regression models predicting self-esteem (Model A), positive affect (Model B) and satisfaction with life (Model C). Values signify unstandardized regression coefficients. The direct effect of coach autonomy support on each indicator of psychological well-being are outside parentheses. The total effects are inside parentheses. Gender, sport type, and age group were included as covariates in all three models.

* $p < .05$. ** $p < .01$. *** $p < .001$.

affect, and satisfaction with life. Lastly, when total life skills development was entered as a mediator, the direct effect of coach autonomy support on self-esteem, positive affect, and satisfaction with life was reduced but still significant, suggesting partial mediation.

Discussion

Alongside previous research, this study forms a persuasive argument that sports help young people to develop their life skills. Specifically, the findings from this study confirmed the results of a review paper¹⁶, which reported that young people perceive they develop the following life skills through sport: teamwork, goal setting, time management, emotional skills, interpersonal communication, social skills, leadership, and problem solving and decision making. When compared to the research in physical education,²⁵ it seems that youth sport participants perceive they develop the same eight life skills, but to a greater extent than students within physical education classes.

Within the current study, it was promising that the LSSS¹⁵ proved a reliable and valid measure of life skills development. This is particularly the case given the dominance of qualitative research within the literature⁶ and past difficulties in measuring life skills development within sport.¹⁷ Our findings should encourage other researchers to utilise the LSSS when investigating life skills development through sport. Coaches or practitioners delivering sports-based youth development programs (e.g., Sport United to Promote Education and Recreation; SUPER)⁴⁶ and sport for development and peace programs (e.g., Grassroot Soccer)⁴⁷ could also use the LSSS to evaluate the targeted outcomes of their programs. For instance, the LSSS could be used to assess the development of teamwork, goal setting, communication, problem solving, and emotional skills, which are targeted outcomes of the SUPER program⁴⁶, and leadership skills, which is a key outcome of the Grassroot Soccer program.⁴⁷ This would seem a particularly important endeavour given the lack of critical evaluation of such programs.^{48,49}

391 Researchers from both sport³² and developmental psychology² have suggested that
392 the more life skills young people possess, the more likely they will develop in a positive
393 manner. Similar to findings in physical education,²⁵ results from this study supported the
394 idea of a “pile-up” effect within youth sport, as total life skills were positively related to
395 participants’ self-esteem, positive affect, and satisfaction with life. Based on these novel
396 findings, researchers and practitioners should advise coaches to help participants develop a
397 range of life skills through sport (i.e., utilize the “pile up” effect). According to the existing
398 evidence-based literature,^{10,11,24} coaches could utilize the following strategies in order to
399 develop participants’ life skills: be intentional, selective, and systematic in teaching life
400 skills; provide participants with opportunities to develop specific life skills; establish rules
401 to follow and hold participants accountable for their actions; model the life skills they want
402 participants to learn; use teachable moments to develop particular life skills; help
403 participants to think for themselves; and engage participants in team/group discussions. It
404 is also important to note that there is a body of literature on training coaches to teach life
405 skills. For example, the SUPER program⁴⁶ provides guidance on how to train coaches to
406 teach specific life skills and some recent research has outlined how coaches were trained to
407 integrate life skills into Golf Canada’s youth programs.⁵⁰ Other recent studies^{51,52} have also
408 highlighted how technological tools such as websites or group messaging services (e.g.,
409 WhatsApp) could be used to better train coaches on how to integrate life skills development
410 into their practices. Despite these promising developments within the research literature,
411 there is still a clear need for coach training programs organized by national governing
412 bodies for sport to better prepare coaches to teach such a variety of life skills.¹⁰

413 Like Flett et al.’s²⁴ qualitative study, the current study found that coach autonomy
414 support was positively related to participants’ development of a range of different life
415 skills. In practice, this means that coaches should provide choice within practice/training,

acknowledge participants' feelings and perspectives, give a rationale for tasks, provide opportunities for initiative taking and independent work, and deliver competence feedback.^{21,53} For the interested reader, guidance on how to train coaches to be more autonomy supportive is provided by Su and Reeve's⁵⁴ meta-analysis on autonomy support interventions and Mahoney et al.'s⁵⁵ intervention study with rowing coaches. Given our own positive findings in relation to coach autonomy support, future research focused on testing self-determination theory²⁰ should investigate whether the satisfaction of the three basic needs of autonomy, competence, and relatedness mediates the relationships between coach autonomy support and participants' life skills development. In line with Benson and Saito's¹ framework for youth development theory and research, future studies could also assess other aspects of the sports environment (e.g., parental behaviors or peer relationships) which may be antecedents of young peoples' life skills development.

In their framework, Benson and Saito¹ suggested that the life skills young people learn should be positively related to other well-being outcomes. For individual life skills, mediation models from this study generally suggested that this was not the case. Only a small number of life skills were positively related to the psychological well-being indicators when tested within the mediation models and one life skill showed a small negative relationship. Only leadership was positively associated with participants' self-esteem; goal setting, time management, interpersonal communication, and social skills were positively related to positive affect; and none of the life skills were associated with participants' satisfaction with life. Thus, it seems that only certain life skills developed through sport are positively related to young peoples' psychological well-being. One explanation for our findings was that competition amongst the eight mediators hindered the ability of the statistical analysis to detect possible relationships between individual life skills and the psychological well-being indicators. This is because the unique variance in

the dependent variable explained by the mediator is reduced when controlling for other mediators.⁴³ A second explanation for our findings is that self-esteem, positive affect, and satisfaction with life are global constructs that may be associated with some variables and not others – and are most likely to be influenced by a range of variables combined (as was the case with total life skills in the present study). This proposition is supported by past research illustrating that self-esteem is influenced by self-concept in only certain domains,⁵⁶ along with perceptions of the self in a range of areas combined.⁵⁷ Based on some initial research on life skills transference,⁵⁸ future studies could investigate if the eight life skills assessed via the LSSS transfer to and impact upon other specific life domains such as school work, friendships or family life. A final possible explanation for our findings is that the cross-sectional design of our study was a limiting factor. It may be the case that life skills have an effect on young peoples' psychological well-being over an extended period of time. For example, a young person low in self-esteem may learn social and interpersonal communication skills within sport over a two-year period and then show an increase in self-esteem. Therefore, follow-up studies could investigate the effect of individual life skills on psychological well-being indicators over time.

Regarding mediation, Benson and Saito's¹ framework – along with recent sports-based models^{17,33} – suggested that life skills development should mediate the relationship between coach autonomy support and participants' psychological well-being. Like previous research,^{12,25,26} this study showed a direct relationship between coach autonomy support and each of the psychological well-being indicators. This study also showed that individual life skills did not consistently mediate these relationships. In contrast, a novel finding of the present study was that total life skills consistently partially mediated the relationships between coach autonomy support and all three psychological well-being indicators. Again, this finding highlights the importance of coaches developing multiple

life skills in their participants, so as to take advantage of the “pile-up” effect.²

Limitations and Future Recommendations

The present study had a number of limitations which need to be addressed. To begin, with self-report data there is always a concern with social desirability and the truthfulness of responses. Along with using self-report, future research could gain coaches’ or parents’ perspectives to corroborate participants’ perceptions that they develop life skills through sport. As all data was collected at one time-point, common method bias could be a limitation for this study. According to Podsakoff et al.,⁵⁹ the use of different response formats for the independent, mediator and dependent variables in this study should have reduced possible common method bias. Future studies could reduce possible common method bias further by obtaining the independent and dependent variables from different sources or by introducing a time lag between measuring the independent and dependent variables.⁵⁹ Another limitation was the cross-sectional design of this study, which means that causality could not be established between variables. Nonetheless, the findings from the current study should encourage future longitudinal and intervention-based studies to investigate the causal relationships and mechanisms between the coaching climate, participants’ life skills development within sport, and their psychological well-being.

Conclusion

In summary, this study found that British youth sport participants perceived they were developing the following life skills through sport: teamwork, goal setting, time management, emotional skills, interpersonal communication, social skills, leadership, and problem solving and decision making. Findings showed that coach autonomy support was positively related to the development of all eight life skills and total life skills were positively related to all three psychological well-being indicators – providing support for the “pile-up” effect.² In contrast, our mediation analyses found that individual life skills were not consistently related

to participants' psychological well-being and one life skill even displayed a small negative relationship with participants' self-esteem. In general, the findings did support Benson and Saito's framework for youth development theory and research,¹ which should encourage future studies to use this framework when investigating youth development through sport. In practice, the results suggest that coaches should work to ensure young people develop a range of life skills through their participation in sport. Creating an autonomy supportive climate is one way that coaches can achieve this aim and also foster young people's psychological well-being.

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